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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/647,035	08/21/2003	Gary R. Lennen	A-1456/Tank-227	1675

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EXAMINER

PHU, PHUONG M

ART UNIT PAPER NUMBER

2611

DATE MAILED: 12/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

87

<b>Office Action Summary</b>	<b>Application No.</b> 10/647,035	<b>Applicant(s)</b> LENNEN, GARY R.	
	<b>Examiner</b> Phuong Phu	<b>Art Unit</b> 2611	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 21 August 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-41 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,8,9,11,16,17,19,24-26,28-30,32-37 and 39-41 is/are rejected.
- 7) ☒ Claim(s) 3-7,10,12-15,18,20-23,27,31 and 38 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>8/21/03</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 39-41 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

-Claim 39 recites the limitation “a computer storage medium useful in association with a receiver of a phase modulated signal, said receiver having a processor and memory, said computer-readable storage medium including computer-readable code instructions”. The specification of the instant application does not disclose an adequate and enabling disclosure for the claimed computer storage medium. It is found no where in the specification, particularly on pages 25-27, the disclosure of “memory” and “computer-readable code instructions” for enabling the “computer storage medium”.

-Similarly, regarding to claim 40, it is found no where in the specification, particularly on pages 25-27, the disclosure of “memory” and “computer-readable code instructions” for enabling the “a computer storage medium”.

-Similarly, regarding to claim 41, it is found no where in the specification, particularly on pages 25-27, the disclosure of “sequence of instructions” of a “computer-readable medium” for enabling the “computer program product”.

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1, 2, 24, 25, 26 are rejected under 35 U.S.C. 102(e) as being anticipated by Stralen (6,940,927).

-Regarding to claims 1 and 24, see figures 1 and 3, and col. 4, lines 37 to col. 7, line 37, Stralen discloses a method of decoding a received phase modulated carrier signal (y(t)) and an associated system, the method/system (see figure 1) comprising:

procedure/device (11) (see figure 1), under a maximum likelihood Viterbi algorithm (see figure 3), of computing a most probable trellis path having the highest probability of representing the phase modulated carrier signal, (the computation of trellis path considered here equivalent with the limitation “total probability of a current data bit being "one" or "zero" at a time epoch”), by computing phase transitions (Phase Transitions (see figure 3)) between a current phase of said received phase modulated signal (y(t)) and a phase corresponding to a previously computed data bit (d'), the phase transitions associated with a most probable state being occurred along the trellis path, (the computation of the phase transitions considered here equivalent with the limitation “plurality of probabilities of phase transitions at a plurality of time epochs, each said probability of a phase transition at one said time epoch being a probability of a phase transition between a current phase of said received phase modulated signal and a phase

Art Unit: 2611

corresponding to a previously computed data bit”), (see col. 1, lines 37-65, col. 6, line 40 to col. 7, line 37); and

procedure/device (11) (see figure 1) of outputting said current data bit ( $d'$ ) as being a digital data, (considered here equivalent with the limitation ““one" or "zero" at said time epoch”, based on said computed trellis path.

-Regarding to claims 2 and 25, as similarly applied to claim 1 set forth above and herein incorporated by reference, see figures 1 and 3, and col. 4, lines 37 to col. 7, line 37, Stralen discloses a method of decoding a received phase modulated carrier signal ( $y(t)$ ) and an associated system, the method/system (see figure 1) comprising:

procedure/device (11) of receiving said phase modulated carrier signal;

procedure/device (10) of performing a frequency/phase lock loop (12, 13, 14, 16, 19, 12) tracking of said received phase modulated signal having a carrier frequency (see col. 4, lines 37-67);

procedure/device (10) of locking on to said carrier frequency of said received phase modulated signal using said frequency/phase lock loop (see col. 4, lines 37-67);

procedure/device (11) (see figure 1), under a maximum likelihood Viterbi algorithm (see figure 3), of computing a most probable trellis path having the highest probability of representing the phase modulated carrier signal, (the computation of trellis path considered here equivalent with the limitation “total probability of a current data bit being "one" or "zero" at a time epoch”), by computing phase transitions (Phase Transitions (see figure 3)) between a current phase of said received phase modulated signal ( $y(t)$ ) and a phase corresponding to a previously computed data bit ( $d'$ ), the phase transitions associated with a most probable state being occurred

Art Unit: 2611

along the trellis path, (the computation of the phase transitions considered here equivalent with the limitation “plurality of probabilities of phase transitions at a plurality of time epochs, each said probability of a phase transition at one said time epoch being a probability of a phase transition between a current phase of said received phase modulated signal and a phase corresponding to a previously computed data bit”), (see col. 1, lines 37-65, col. 6, line 40 to col. 7, line 37); and

procedure/device (11) (see figure 1) of outputting said current data bit (d<sup>i</sup>) as being a digital data, (considered here equivalent with the limitation “one” or “zero” at said time epoch”, based on said computed trellis path.

-Regarding to claim 26, Stralen discloses device (36) (see figure 3) of performing a data correction operation (Viterbi) on a plurality of said outputted data bits.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 8, 9, 11, 16, 17, 19, 28-30, 32-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dent (6,944,206) in view of Stralen.

-Regarding to claims 8, 9, 11, 16, 17, 19, (see figures 3, 5 and 6A, col. 6, lines 42-53, col. 3, lines 52-61, col. 9, line 1 to col. 11, line 15, col. 17, lines 41-57), Dent discloses a method using a receiver (235, 255) (see figure 6A) comprising a demodulator process (240) configurable

Art Unit: 2611

for decoding/demodulating GPS phase modulated carrier signal (see col. 6, lines 42-53, col. 17, lines 51-58), the method (see figure 6A) comprising:

procedure (235) of receiving a phase modulated GPS signal using a GPS antenna (ANTENNA); and

procedure (255) of extracting a GPS data (260) from said received phase modulated GPS signal.

Dent does not disclose a computing procedure as claimed.

Stralen, as set forth for claims 1 and 2, and herein incorporated, teaches a demodulation process comprising procedure of computing a total probability of a current data bit being "one" or "zero" at a time epoch by computing a plurality of probabilities of phase transitions at a plurality of time epochs, each said probability of a phase transition at one said time epoch being a probability of a phase transition between a current phase of a received phase modulated signal and a phase corresponding to a previously computed data bit.

Since Dent does not teach in detail how the demodulator process (240) is implemented, it would have been obvious for one skilled in the art to implement Dent in such a way that demodulator process (240) would comprise procedure of computing a total probability of a current data bit being "one" or "zero" at a time epoch by computing a plurality of probabilities of phase transitions at a plurality of time epochs, each said probability of a phase transition at one said time epoch being a probability of a phase transition between a current phase of a received phase modulated signal and a phase corresponding to a previously computed data bit, as taught by Stralen, so that the GPS phase modulated carrier signal would be demodulated as required.

Art Unit: 2611

Further regarding to claims 9, 11, 17 and 19, Dent in view of Stralen teaches that the method is configurable to perform:

procedure of performing a frequency/phase lock loop tracking of a received phase modulated GPS signal having a carrier frequency by using a GPS digital tracker (see Stralen, (12, 13, 14, 16, 19, 12) of figure 1);

procedure of locking on to said GPS carrier frequency of said received phase modulated GPS signal by using a tracking and navigation block (see Stralen, (12, 13, 14, 16, 19) of figure 1); and

procedure of outputting said current GPS data bit as being “one” or “zero” at said GPS time epoch based on said computed total probability (see Stralen, (11) of figure 1).

-Regarding to claims 28, 29, 35, 36, as similarly applied to claims 8, 9, 11, 16, 17, 19, set forth above and herein incorporated, see figures 3, 5 and 6A, col. 6, lines 42-53, col. 3, lines 52-61, col. 9, line 1 to col. 11, line 15, col. 17, lines 41-57), Dent discloses a system using a receiver (235, 255) (see figure 6A) comprising a demodulator (240) configurable for decoding/demodulating GPS phase modulated carrier signal (see col. 6, lines 42-53, col. 17, lines 51-58), the system (see figure 6A) comprising:

device (235) of receiving a phase modulated GPS signal using a GPS antenna (ANTENNA); and

device (255) of extracting a GPS data (260) from said received phase modulated GPS signal.

Dent does not disclose a device/means of computing procedure as claimed.



Stralen, as set forth for claims 1 and 2, and herein incorporated, teaches a demodulation device comprising procedure/device of computing a total probability of a current data bit being "one" or "zero" at a time epoch by computing a plurality of probabilities of phase transitions at a plurality of time epochs, each said probability of a phase transition at one said time epoch being a probability of a phase transition between a current phase of a received phase modulated signal and a phase corresponding to a previously computed data bit.

Since Dent does not teach in detail how the demodulator (240) is implemented, it would have been obvious for one skilled in the art to implement Dent in such a way that demodulator (240) would comprise procedure of computing a total probability of a current data bit being "one" or "zero" at a time epoch by computing a plurality of probabilities of phase transitions at a plurality of time epochs, each said probability of a phase transition at one said time epoch being a probability of a phase transition between a current phase of a received phase modulated signal and a phase corresponding to a previously computed data bit, as taught by Stralen, so that the GPS phase modulated carrier signal would be demodulated as required.

Further regarding to claims 29, 36, Dent in view of Stralen teaches that the system is configurable to comprise:

procedure/device of performing a frequency/phase lock loop tracking of a received phase modulated GPS signal having a carrier frequency by using a GPS digital tracker (see Stralen, (12, 13, 14, 16, 19, 12) of figure 1); and

procedure/device of locking on to said GPS carrier frequency of said received phase modulated GPS signal by using a tracking and navigation block (see Stralen, (12, 13, 14, 16, 19) of figure 1).

Art Unit: 2611

-Regarding to claims 30, 37, Dent in view of Stralen teaches that the system is configurable to comprise a procedure/device of performing a data correction operation (Viterbi) on a plurality of said outputted data bits (see Stralen, (36) of figure 3).

-Regarding to claim 32, Dent discloses a GPS antenna (see (235) of figure 6A).

-Regarding to claim 33, Dent in view of Stralen teaches that the system is configurable to comprise a procedure/device of a digital tracker (see Stralen, (16, 19, 12, 13, 14) of figure 1).

-Regarding to claim 34, Stralen disclose a data extraction block (see (245, 250) of figure 6A).

7. Claims 39 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stralen.

-Regarding to claim 39, as set forth for claim 1 and herein incorporated, Stralen teaches a method comprises claimed operational procedures/steps except that he fails to teach a computer-readable storage medium useful in association with a receiver of a phase modulated signal, said receiver having a processor and memory, said computer-readable storage medium including a computer-readable code instructions configured to cause said processor to execute the procedures/steps, as claimed.

However, implementing a system with a processor and a memory storing a software including instructions, wherein the software, when being executed, causes/the the processor to control/operate the operations of the system, is well-known in the art, and the examiner takes Official Notice.

It would have been obvious for one skilled in the art, within his skills, to implement Stralen receiver with a processor and a memory storing a software, (the software considered here equivalent with the limitation “computer-readable storage medium”, including instructions, in

Art Unit: 2611

such a way that the software, when being executed, causes/the the processor to control/operate the operational procedures of the receiver so that with such the implementation, Stralen receiver would be enhanced with features of programmability and computerized operations in a high speed fashion.

-Regarding to claim 41, as set forth for claim 1 and herein incorporated, Stralen teaches a method comprises claimed operational procedures/steps except that he fails to teach a computer program product that includes a computer-readable storage medium having a sequence of instructions which, when executed by a processor, causes the processor to execute the procedures/steps, as claimed.

However, implementing a system with a processor and a memory storing a software including instructions, wherein the software, when being executed, causes/the the processor to control/operate the operations of the system, is well-known in the art, and the examiner takes Official Notice.

It would have been obvious for one skilled in the art, within his skills, to implement Stralen receiver with a processor and a memory storing a software, (the memory considered here equivalent with the limitation “computer program product”, the software equivalent with the limitation “computer-readable storage medium”), including computer-readable code instructions, in such a way that the software, when being executed by the processor, causes/the the processor to control/operate the operational procedures of the receiver so that with such the implementation, Stralen receiver would be enhanced with features of programmability and computerized operations in a high speed fashion.

Art Unit: 2611

***Allowable Subject Matter***

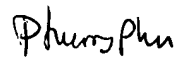
8. Claims 3-7, 10, 12-15, 18, 20-23, 27, 31, 38 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuong Phu whose telephone number is 571-272-3009. The examiner can normally be reached on M-F (8:00 AM - 4:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Phuong Phu  
11/10/06

**PHUONG PHU  
PRIMARY EXAMINER**

Phuong Phu  
Primary Examiner  
Art Unit 2611